

=> FIL REG  
FILE 'REGISTRY' ENTERED AT 11:35:05 ON 30 JUL 2009  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2009 American Chemical Society (ACS)

=> D HIS NOFILE

FILE 'HCAPLUS' ENTERED AT 08:13:36 ON 30 JUL 2009  
E US 20060163116/PN  
L1 1 SEA SPE=ON ABB=ON PLU=ON US20060163116/PN  
ACT NGU528/A  
-----  
L2 ( 1258) SEA SPE=ON ABB=ON PLU=ON BAPTISTA ?/AU  
L3 ( 456) SEA SPE=ON ABB=ON PLU=ON CERQUEIRA ?/AU  
L4 ( 22) SEA SPE=ON ABB=ON PLU=ON SANDES ?/AU  
L5 1716 SEA SPE=ON ABB=ON PLU=ON L2 OR L3 OR L4  
-----  
ACT NGU528A/A  
-----  
L6 1011 SEA SPE=ON ABB=ON PLU=ON ("PETROLEO BRASILEIRO SA  
PETROBRAS"/CO,CS,PA OR "PET BRAS S A"/CO,CS,PA OR "PET  
BRASILEIRO S A"/CO,CS,PA OR PETROBRAS/CO,CS,PA OR  
"PETROLEO BRASILEIRO S A"/CO,CS,PA OR "PETROLEO BRASILEIR  
O S A PETROBRAS"/CO,CS,PA)  
L7 6513 SEA SPE=ON ABB=ON PLU=ON RISER?  
L8 7527 SEA SPE=ON ABB=ON PLU=ON CRACK? (2A) FLUID?  
L9 29289 SEA SPE=ON ABB=ON PLU=ON CATALY? (2A) CRACK?  
L10 QUE SPE=ON ABB=ON PLU=ON HYDROCARBON? OR PETROLEUM?  
OR OIL# OR LPG# OR (LIQ# OR LIQUID?) (2A) PETROL? (2A)  
GAS  
E GAS OILS/CT  
E E3+ALL  
E E9+ALL  
L11 477053 SEA SPE=ON ABB=ON PLU=ON "PETROLEUM PRODUCTS"+OLD,NT,R  
T/CT,CW,BI,OBI  
E ZEOLITE/CT  
E ZEOLITE Z/CT  
E E20+ALL  
L12 12726 SEA SPE=ON ABB=ON PLU=ON "ZEOLITE ZSM-5"+OLD,NT/CT,CW,  
BI,OBI  
E Y ZEOLITES/CT  
E E3+ALL  
L13 13890 SEA SPE=ON ABB=ON PLU=ON "Y ZEOLITES"+NT,OLD/CT,CW,BI,  
OBI  
E SHALE OILS/CT  
E E3+ALL  
L14 29090 SEA SPE=ON ABB=ON PLU=ON "SHALE OILS"+OLD,NT,RT/CT,CW,  
BI,OBI  
E PETROLEUM REFINING RESIDUES/CT  
E E3+ALL

L15	71916	SEA SPE=ON	ABB=ON	PLU=ON	"PETROLEUM REFINING RESIDUES" +OLD,NT,RT/CT,CW,BI,OBI E PETROLEUM CRACKING/CT E E3+ALL
L16	61123	SEA SPE=ON	ABB=ON	PLU=ON	"PETROLEUM CRACKING"+NT,RT,OLD/CT,CW,BI,OBI
L17	15470	SEA SPE=ON	ABB=ON	PLU=ON	(FEED# OR FEEDSTOCK?) (2A) (PLURAL? OR DUAL? OR MANY? OR SEVERAL? OR FEW# OR MULTIPL? OR MIX### OR DIFFERENT? OR SPLIT?)
L18	1900	SEA SPE=ON	ABB=ON	PLU=ON	L11 (L) L8
L19	5547	SEA SPE=ON	ABB=ON	PLU=ON	L11 (L) L9
L20	6816	SEA SPE=ON	ABB=ON	PLU=ON	FLUID? (3A) CATALY? (3A) CRACK?
L21	1656	SEA SPE=ON	ABB=ON	PLU=ON	L11 (L) L20
L22	127	SEA SPE=ON	ABB=ON	PLU=ON	L12 (L) L20
L23	208	SEA SPE=ON	ABB=ON	PLU=ON	L13 (L) L20
L24	14	SEA SPE=ON	ABB=ON	PLU=ON	L14 (L) L20
L25	795	SEA SPE=ON	ABB=ON	PLU=ON	L15 (L) L20
L26	2002	SEA SPE=ON	ABB=ON	PLU=ON	L16 (L) L20
L27	151	SEA SPE=ON	ABB=ON	PLU=ON	L11 (L) L17
L28	12	SEA SPE=ON	ABB=ON	PLU=ON	L12 (L) L17
L29	9	SEA SPE=ON	ABB=ON	PLU=ON	L13 (L) L17
L30	8	SEA SPE=ON	ABB=ON	PLU=ON	L14 (L) L17
L31	78	SEA SPE=ON	ABB=ON	PLU=ON	L15 (L) L17
L32	58	SEA SPE=ON	ABB=ON	PLU=ON	L16 (L) L17
L33	10	SEA SPE=ON	ABB=ON	PLU=ON	L21 AND L27
L34	3	SEA SPE=ON	ABB=ON	PLU=ON	L22 AND L28
L35	2	SEA SPE=ON	ABB=ON	PLU=ON	L23 AND L29
L36	2	SEA SPE=ON	ABB=ON	PLU=ON	L24 AND L30
L37	7	SEA SPE=ON	ABB=ON	PLU=ON	L25 AND L31
L38	9	SEA SPE=ON	ABB=ON	PLU=ON	L26 AND L32
L39	11	SEA SPE=ON	ABB=ON	PLU=ON	L33 OR L34 OR L35 OR L36 OR L37 OR L38
L40	11	SEA SPE=ON	ABB=ON	PLU=ON	1808-2004/PY,PRY,AY AND L39
L41	107	SEA SPE=ON	ABB=ON	PLU=ON	L17 (L) L20
L42	41	SEA SPE=ON	ABB=ON	PLU=ON	L41 AND L7
L43	34	SEA SPE=ON	ABB=ON	PLU=ON	L42 NOT L40
L44	2	SEA SPE=ON	ABB=ON	PLU=ON	FEED MIXING TECHNIQUE FOR FLUIDIZED CATALYTIC CRACKING OF HYDROCARBON OIL/TI AND L43
L45	1	SEA SPE=ON	ABB=ON	PLU=ON	EXPEDIENT METHOD FOR ALTERING THE YIELD DISTRIBUTION FROM FLUID CATALYTIC CRACKING UNITS/TI AND L43
L46	1	SEA SPE=ON	ABB=ON	PLU=ON	MULTIPLE-ZONE FLUID CATALYTIC CRACKING OF MULTIPLE FEEDSTOCKS IN RISER/TI AND L43
L47	1	SEA SPE=ON	ABB=ON	PLU=ON	GASOLINE OCTANE ENHANCEMENT IN FLUID CATALYTIC CRACKING WITH SPLIT FEED INJECTION TO A RISER REACTOR/TI AND L43
L48	5	SEA SPE=ON	ABB=ON	PLU=ON	L44 OR L45 OR L46 OR L47
L49	5	SEA SPE=ON	ABB=ON	PLU=ON	1808-2004/PY,PRY,AY AND L48
L50	16	SEA SPE=ON	ABB=ON	PLU=ON	L40 OR L49

FILE 'WPIX' ENTERED AT 09:45:27 ON 30 JUL 2009

E US20060163116/PN

L51 1 SEA SPE=ON ABB=ON PLU=ON US20060163116/PN

L52 1987 SEA SPE=ON ABB=ON PLU=ON L10 AND L20

L53 113 SEA SPE=ON ABB=ON PLU=ON L52 AND L17

L54 QUE SPE=ON ABB=ON PLU=ON (C10G0051-00 OR C10G0051-02  
OR C10G0051-06 OR C10G0011-00 OR C10G0011-05 OR C10G0011-  
18)/IC

L55 17 SEA SPE=ON ABB=ON PLU=ON L53 AND L54  
E H04-B02/CT  
E H04-B02/MC  
E H04-B02/MC  
E E3+ALL

L56 5325 SEA SPE=ON ABB=ON PLU=ON H04-B02+OLD/MC,BI,ABEX  
E H04-F02B/MC  
E E3+ALL

L57 4858 SEA SPE=ON ABB=ON PLU=ON H04-F02B+OLD/MC,BI,ABEX

L58 88 SEA SPE=ON ABB=ON PLU=ON L53 AND L56

L59 32 SEA SPE=ON ABB=ON PLU=ON L53 AND L57

L60 29 SEA SPE=ON ABB=ON PLU=ON L58 AND L59  
D L55 1-17 TRI  
D L60 1-29 TRI

L61 1 SEA SPE=ON ABB=ON PLU=ON FLUIDIZED CATALYTIC CRACKING  
FEED INJECTOR, FOR PETROLEUM REFINING INDUSTRY, MIXES  
FLUID FROM FEED INLET WITH ATOMIZED FLUID FROM DIFFERENT  
INLETS, IN DIFFERENT MIXING ZONES, FOR SUPPLYING MIXTURE  
TO REACTION ZONE/TI AND L55

L62 0 SEA SPE=ON ABB=ON PLU=ON CONVERTING HYDROCARBON FEED  
TO GASOLINE ETC. IN FCC RISER REACTOR- GASOLINE OCTANE  
NUMBER BEING INCREASED BY DIVIDING FEED INJECTION OVER  
POINTS AT DIFFERENT HEIGHTS UP THE RISER/TI AND L55

L63 0 SEA SPE=ON ABB=ON PLU=ON CONVERTING HYDROCARBON FEED  
TO GASOLINE ETC. IN FCC RISER REACTOR - GASOLINE OCTANE  
NUMBER BEING INCREASED BY DIVIDING FEED INJECTION OVER  
POINTS AT DIFFERENT HEIGHTS UP THE RISER/TI AND L55

L64 1 SEA SPE=ON ABB=ON PLU=ON CONVERTING HYDROCARBON FEED  
TO GASOLINE ETC./TI AND L55

L65 1 SEA SPE=ON ABB=ON PLU=ON FLUID CATALYTIC CRACKING FOR  
HYDROCARBONS COMPRISES INJECTING CONTAMINATED FEEDSTOCK/T  
I

L66 1 SEA SPE=ON ABB=ON PLU=ON FLUID CATALYTIC CRACKING OF  
MIXED HYDROCARBONS FEEDSTOCKS/TI AND L60

L67 1 SEA SPE=ON ABB=ON PLU=ON FLUIDIZED CATALYTIC CRACKING  
FEED ATOMIZATION, FOR USE IN PETROLEUM/B,ABEX AND L60

L68 1 SEA SPE=ON ABB=ON PLU=ON UPPER FEED INJECTOR FOR  
FLUIDISED CATALYTIC/TI AND L60

L69 5 SEA SPE=ON ABB=ON PLU=ON L64 OR L65 OR L66 OR L67 OR  
L68

L70 3 SEA SPE=ON ABB=ON PLU=ON 1808-2004/PY,PRY,AY AND L69

L71 5565 SEA SPE=ON ABB=ON PLU=ON LPG#/BI,ABEX OR (LIQ#/BI,ABEX  
OR LIQUID?/BI,ABEX) (2A) PETROL?/BI,ABEX (2A) GAS/B,ABE  
X

L72 5 SEA SPE=ON ABB=ON PLU=ON L53 AND L71

L73 4 SEA SPE=ON ABB=ON PLU=ON 1808-2004/PY,PRY,AY AND L72

FILE 'TULSA' ENTERED AT 10:21:45 ON 30 JUL 2009

E CRACKING/CT  
E E3+ALL  
E FLUID CATALYTIC CRACKING/CT  
E FLUID CRACKING/CT  
E CRACKING/CT  
E E3+ALL  
L74 3040 SEA SPE=ON ABB=ON PLU=ON CRACKING+OLD,NT/CT  
E RISER/CT  
E E4+ALL  
E REACTOR/CT  
E RISER REACTOR?  
E RISER REACTOR/CT  
E E4+ALL  
E PETROLEUM REFINING/CT  
E REFINING/CT  
E E3+ALL  
E OIL REFINING/CT  
E E2+ALL  
L75 23174 SEA SPE=ON ABB=ON PLU=ON "OIL REFINERY"+RT/CT  
L76 93 SEA SPE=ON ABB=ON PLU=ON BAPTISTA ?/AU OR CERQUEIRA  
?/AU OR SANDES ?/AU  
L77 2 SEA SPE=ON ABB=ON PLU=ON L76 AND (L74 OR L75)

FILE 'HCAPLUS' ENTERED AT 10:30:49 ON 30 JUL 2009

L78 1 SEA SPE=ON ABB=ON PLU=ON L50 AND (L5 OR L6)  
L79 16 SEA SPE=ON ABB=ON PLU=ON L78 OR L50

FILE 'TULSA' ENTERED AT 10:33:45 ON 30 JUL 2009

L80 13501 SEA SPE=ON ABB=ON PLU=ON RISER?  
L81 8 SEA SPE=ON ABB=ON PLU=ON L74 AND L80  
E RISER PIPE/CT  
E E3+ALL  
L82 44974 SEA SPE=ON ABB=ON PLU=ON "RISER PIPE"+RT/CT  
E PETROLEUM/CT  
E E3+ALL  
L83 118811 SEA SPE=ON ABB=ON PLU=ON PETROLEUM/CT OR "SHALE  
OIL"/CT OR "TAR SAND OIL"/CT OR L34  
E PETROLEUM FRACTION/CT  
E E3+ALL  
L84 64 SEA SPE=ON ABB=ON PLU=ON FCC# OR FLUID? (2A) CATALY?  
(2A) CRACK?  
L85 1828 SEA SPE=ON ABB=ON PLU=ON L74 AND L83  
L86 11 SEA SPE=ON ABB=ON PLU=ON L85 AND L84  
L87 159 SEA SPE=ON ABB=ON PLU=ON (FEED# OR FEEDSTOCK?) (2A)  
(PLURAL? OR DUAL? OR MANY? OR SEVERAL? OR FEW# OR  
MULTIPL? OR MIX### OR DIFFERENT? OR SPLIT?)  
L88 7 SEA SPE=ON ABB=ON PLU=ON L74 AND L87  
E ZEOLYTE/CT  
E E2+ALL

L89 23376 SEA SPE=ON ABB=ON PLU=ON ZEOLITE+NT,RT/CT  
 L90 136 SEA SPE=ON ABB=ON PLU=ON L74 AND L89  
 L91 1 SEA SPE=ON ABB=ON PLU=ON L90 AND L17  
 L92 159 SEA SPE=ON ABB=ON PLU=ON (FEED# OR FEEDSTOCK?) (2A)  
 (PLURAL? OR DUAL? OR MANY? OR SEVERAL? OR FEW# OR  
 MULTIPL? OR MIX### OR DIFFERENT? OR SPLIT?)  
 L93 4 SEA SPE=ON ABB=ON PLU=ON L82 AND L92  
 E SPLIT FEED/CT  
 E FEED/CT  
 E INJECTION/CT  
 E E3+ALL  
 L94 100 SEA SPE=ON ABB=ON PLU=ON L92 AND (L84 OR L83 OR L75  
 OR L74 OR L82 OR L89)  
 L95 8 SEA SPE=ON ABB=ON PLU=ON (C10G0051-00 OR C10G0051-02  
 OR C10G0051-06 OR C10G0011-00 OR C10G0011-05 OR C10G0011-  
 18)/IC  
 L96 0 SEA SPE=ON ABB=ON PLU=ON L94 AND L95  
 L97 1 SEA SPE=ON ABB=ON PLU=ON L92 AND L84  
 L98 89 SEA SPE=ON ABB=ON PLU=ON L92 AND L83  
 L99 9 SEA SPE=ON ABB=ON PLU=ON L92 AND L75  
 L100 7 SEA SPE=ON ABB=ON PLU=ON L92 AND L74  
 L101 4 SEA SPE=ON ABB=ON PLU=ON L92 AND L82  
 L102 10 SEA SPE=ON ABB=ON PLU=ON L92 AND L89  
 L103 28 SEA SPE=ON ABB=ON PLU=ON L97 OR L99 OR L100 OR L101  
 OR L102

=> FIL HCAP

FILE 'HCAPLUS' ENTERED AT 11:35:14 ON 30 JUL 2009  
 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
 PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
 COPYRIGHT (C) 2009 AMERICAN CHEMICAL SOCIETY (ACS)

=> D L79 1-16 IBIB ABS HITIND RETABLE

L79 ANSWER 1 OF 16 HCAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2006:633936 HCAPLUS Full-text  
 DOCUMENT NUMBER: 145:65879  
 TITLE: Processing of different feeds in fluid catalytic  
 cracking unit  
 INVENTOR(S): Soni, Dalip S.; Castagnos, Leonce F.  
 PATENT ASSIGNEE(S): ABB Lummus Global Inc., USA  
 SOURCE: U.S. Pat. Appl. Publ., 10 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
------------	------	------	-----------------	------

----- ----- US 20060138027	A1	20060629	US 2004-21274	200412 23
			<--	
AU 2005322126	A1	20060706	AU 2005-322126	200512 22
			<--	
CA 2587794	A1	20060706	CA 2005-2587794	200512 22
			<--	
WO 2006071771	A1	20060706	WO 2005-US46778	200512 22
			<--	
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,				
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,				
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM,				
KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG,				
MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT,				
RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT,				
TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,				
IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,				
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,				
TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,				
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
EP 1828346	A1	20070905	EP 2005-855354	200512 22
			<--	
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,				
IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK,				
TR				
CN 101087865	A	20071212	CN 2005-80044843	200512 22
			<--	
JP 2008525597	T	20080717	JP 2007-548518	200512 22
			<--	
IN 2007DN03854	A	20070831	IN 2007-DN3854	200705 23
			<--	
MX 2007006541	A	20070720	MX 2007-6541	200706 01
			<--	
KR 2007091295	A	20070910	KR 2007-713803	

200706  
19

PRIORITY APPLN. INFO.:

<--  
US 2004-21274 A

200412  
23

<--  
WO 2005-US46778 W

200512  
22

AB An apparatus and method for processing different feeds in a fluid catalytic cracking unit are disclosed which result in improved yields of C3, C4 and gasoline range hydrocarbons as compared to conventional systems. The process comprises injecting a main hydrocarbon feed into a catalyst-containing riser reactor through a plurality of main feed injectors, and injecting a light hydrocarbon feed into the riser reactor at a location upstream from the main feed injectors and downstream from a control valve such as a regenerated catalyst slide valve, the light feed being injected in a region having a high d. of catalyst particles. The light feed is injected in a dispersed way such the amount of feed injected corresponds to the d. of catalyst particles at that particular point, with greater amts. of feed being injected at locations having a large number of catalyst particles. Also, a heavy hydrocarbon feed or a heavy recycle stream from the same FCC unit can be injected at the same elevation as the main feed injectors but through sep. injectors.

INCL 208113000

CC 51-6 (Fossil Fuels, Derivatives, and Related Products)

IT Petroleum cracking

Petroleum refining

(apparatus; processing of different feeds in  
fluid catalytic cracking unit)

IT Petroleum cracking

Petroleum cracking catalysts

Valves

(processing of different feeds in  
fluid catalytic cracking unit)

IT Gasoline

Petroleum hydrocarbons

(processing of different feeds in  
fluid catalytic cracking unit)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS  
RECORD (1 CITINGS)

L79 ANSWER 2 OF 16 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2004:1059449 HCAPLUS Full-text

DOCUMENT NUMBER: 142:25718

TITLE: Riser fluid catalytic cracking of heavy  
petroleum feedstocks with staged injection of  
dual feeds

INVENTOR(S): Baptista, Claudia Maria de Lacerda  
Alvarenga; Cerqueira, Henrique  
Soares; Sandes, Emanuel Freire

PATENT ASSIGNEE(S):      Petroleo Brasileiro S. A.--PETROBRAS,  
                               Brazil  
 SOURCE:                   PCT Int. Appl., 39 pp.  
                               CODEN: PIXXD2  
 DOCUMENT TYPE:           Patent  
 LANGUAGE:                English  
 FAMILY ACC. NUM. COUNT:  1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
WO 2004106466	A1	20041209	WO 2004-IB2102	20040519
<--				
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
BR 2003002326	A	20050329	BR 2003-2326	20030603
<--				
CN 1816609	A	20060809	CN 2004-80019283	20040519
<--				
US 20060163116	A1	20060727	US 2005-559528	20051202
<--				
PRIORITY APPLN. INFO.:			BR 2003-2326	A
				20030603
<--				
			WO 2004-IB2102	W
				20040519
<--				

AB   Fluid catalytic cracking of mixed hydrocarbon feedstocks, including heavy petroleum fractions (i.e., gas oils, coker gas oils, distillation residues, etc.), is carried out in a riser reactor in the absence of added hydrogen, such that two feedstocks, one of which is less reactive to cracking than the other, are fed at different levels into the riser reactor such that the production of light fractions



(especially LPG) is maximized. Feed B, the less reactive of the feedstocks (e.g., characterized by a higher coke production and a higher contaminant content), is fed at 5-50 weight% of the total feedstock at  $\geq 1$  locations 10-80% of the riser height above the injection point of feed A. Feed A (the more reactive feed) is typically a heavy gas oil; feed B is a retorted shale oil or a fraction typically produced from pyrolysis or delayed coking of a heavy petroleum fraction (especially a distillation residue). Typical catalysts include Y zeolites and ZSM-5 zeolites.

IC ICM C10G0051-02

CC 51-9 (Fossil Fuels, Derivatives, and Related Products)

IT Gas oils

(coker gas oils, cracking of; riser fluid  
catalytic cracking of heavy petroleum  
feedstocks with staged injection of dual feeds  
)

IT Y zeolites

Zeolite ZSM-5

(cracking catalysts; riser fluid  
catalytic cracking of heavy petroleum  
feedstocks with staged injection of dual feeds  
)

IT Shale oils

(cracking of; riser fluid catalytic  
cracking of heavy petroleum feedstocks with staged  
injection of dual feeds)

IT Petroleum refining residues

(distillation; riser fluid catalytic  
cracking of heavy petroleum feedstocks with staged  
injection of dual feeds)

IT Petroleum products

(gases, liquefied; riser fluid catalytic  
cracking of heavy petroleum feedstocks with staged  
injection of dual feeds)

IT Gas oils

(heavy gas oils, cracking of; riser fluid  
catalytic cracking of heavy petroleum  
feedstocks with staged injection of dual feeds  
)

IT Petroleum refining residues

(pyrolysis, cracking of; riser fluid  
catalytic cracking of heavy petroleum  
feedstocks with staged injection of dual feeds  
)

IT Petroleum cracking

Petroleum cracking catalysts

(riser fluid catalytic cracking of  
heavy petroleum feedstocks with staged injection of dual  
feeds)

IT Gasoline

(riser fluid catalytic cracking of  
heavy petroleum feedstocks with staged injection of dual  
feeds)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	File
Friedman	1959			US 2908630 A	HCAPLUS
Gross	1980			US 4218306 A	HCAPLUS
Swan	1998			US 5846403 A	HCAPLUS
Zhang	2002			US 6416656 B1	HCAPLUS

L79 ANSWER 3 OF 16 HCAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2004:1044992 HCAPLUS Full-text  
 DOCUMENT NUMBER: 142:25665  
 TITLE: Gas-solid two-phase flow and the improvement in the feedstock injection-mixing zone of FCC riser  
 AUTHOR(S): Fan, Yi-ping; Cai, Fei-peng; Shi, Ming-xian; Xu, Chun-ming  
 CORPORATE SOURCE: State Key Laboratory of Heavy Oil, University of Petroleum, Beijing, 102249, Peop. Rep. China  
 SOURCE: Shiyou Xuebao, Shiyou Jiagong (2004), 20(5), 13-19  
 CODEN: SXSHEY; ISSN: 1001-8719  
 PUBLISHER: Shiyou Xuebao, Shiyou Jiagong Bianjibu  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Chinese

AB The cold-model expts. demonstrated two disadvantages of the traditional structure of feedstock injection-mixing zone in FCC riser, namely the particle phase backmixing and the non-uniformity of catalyst concentration in reactor catalyst-oil mixed phase. The principle was to utilize and to control the jet secondary flow to improve the design of feedstock injection-mixing structure. Two new types of feedstock injection-mixing structures are proposed, whose advantages are seen clearly by introducing three parameters: the uniformity index of the radial local d. distribution( $\eta$ ), the relative backmixing ratio of the particle phase( $\phi$ ), and the catalyst/oil concentration ratio( $\eta_i/CE_i$ ).

CC 51-23 (Fossil Fuels, Derivatives, and Related Products)

IT **Petroleum cracking**  
 (apparatus, catalytic, fluidized bed; gas-solid two-phase flow and improvement in feedstock injection-mixing zone of FCC riser)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L79 ANSWER 4 OF 16 HCAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2002:832888 HCAPLUS Full-text  
 DOCUMENT NUMBER: 137:339782  
 TITLE: Multistage spray atomization of fluid catalytic cracking feedstocks with separate mixing zones and atomization fluids  
 INVENTOR(S): Adamson, William Russell; Swan, George A., III; Bedell, Michael Walter  
 PATENT ASSIGNEE(S): ExxonMobil Research and Engineering Company, USA  
 SOURCE: PCT Int. Appl., 29 pp.

DOCUMENT TYPE: CODEN: PIXXD2  
 Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO. ----- -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
WO 2002086020	A1	20021031	WO 2002-US10978	200204 09
<--				
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 20020189974	A1	20021219	US 2002-113194	200204 01
<--				
US 6916416	B2	20050712		
CA 2442745	A1	20021031	CA 2002-2442745	200204 09
<--				
AU 2002311805	A1	20021105	AU 2002-311805	200204 09
<--				
AU 2002311805	B2	20070614		
CN 1503834	A	20040609	CN 2002-808418	200204 09
<--				
JP 2004532317	T	20041021	JP 2002-583538	200204 09
<--				
JP 4185776	B2	20081126		
TW 263674	B	20061011	TW 2002-91107765	200204 16
<--				
PRIORITY APPLN. INFO.:			US 2001-113194	A 200104 19
<--				
			US 2001-285026P	P

200104  
19

<--  
US 2002-113194 A

200204  
01

<--  
WO 2002-US10978 W

200204  
09

<--

- AB A multistage atomization of a fluid catalytic cracking feedstocks through a feed nozzle involves a number of mixing zones, each associated with mixing of an atomizing fluid. Atomization is carried out by: (1) contacting the feed with a first atomization fluid in a first mixing zone, (2) passing the mixture in a second mixing zone, (3) contacting the mixture from step (2) with a second atomizing fluid selected from steam, light hydrocarbon gases, and inert gases, and (4) injecting the atomized fluid through a feed nozzle. Suitable cracking feedstocks include heavy and reduced crude petroleum, atmospheric and vacuum distillation residues, pitch, asphalt, bitumen, tar-sand oils, shale oils, and coal liqs. In addition to the possible components of the second atomizing fluid, the first atomizing fluid can also be subcooled water. The first and second atomizing fluids can be sparged externally and/or internally into the first and second mixing zones, resp.
- IC ICM C10G0011-00  
ICS C10G0035-14
- CC 51-6 (Fossil Fuels, Derivatives, and Related Products)  
Section cross-reference(s): 47
- IT Petroleum cracking  
(apparatus, spray atomization nozzles; multistage spray atomization of  
fluid catalytic cracking  
feedstocks with sep. mixing zones and  
atomization fluids)
- IT Coal liquids  
Petroleum refining residues  
Pitch  
Shale oils  
(cracking of; multistage spray atomization of fluid  
catalytic cracking feedstocks with  
sep. mixing zones and atomization fluids)
- IT Petroleum, processes  
(heavy, cracking of; multistage spray atomization of  
fluid catalytic cracking  
feedstocks with sep. mixing zones and  
atomization fluids)
- IT Hydrocarbons, uses  
(light, atomization fluid; multistage spray atomization of  
fluid catalytic cracking  
feedstocks with sep. mixing zones and  
atomization fluids)
- IT Petroleum refining residues

(vacuum distillation, cracking of; multistage spray atomization of  
 fluid catalytic cracking  
 feedstocks with sep. mixing zones and  
 atomization fluids)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	File
Carpenter	2000			US 6165353 A	HCAPLUS
Sabottke	1993			US 5188805 A	
Swan	2000			US 6093310 A	HCAPLUS
Wells	1996			US 5554341 A	
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)					

L79 ANSWER 5 OF 16 HCAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 1999:708850 HCAPLUS Full-text  
 DOCUMENT NUMBER: 131:324845  
 TITLE: Fluid catalytic cracking process for converting  
 a plurality of feeds  
 INVENTOR(S): Ho, Teh Chung; Fung, Shun Chong; Stuntz, Gordon  
 Frederick; Welch, Robert Charles William; Leta,  
 Daniel Paul  
 PATENT ASSIGNEE(S): Exxon Research and Engineering Co., USA  
 SOURCE: PCT Int. Appl., 27 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
WO 9955801	A1	19991104	WO 1999-US6928	199903 30
<--				
W: CA, JP RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 6123832	A	20000926	US 1999-231697	199901 14
<--				
CA 2328088	A1	19991104	CA 1999-2328088	199903 30
<--				
EP 1076680	A1	20010221	EP 1999-914279	199903 30

R: BE, DE, FR, GB, IT, NL  
JP 2003517491 T 20030527 JP 2000-545952

<--

199903  
30

<--

PRIORITY APPLN. INFO.:

US 1998-67869 A

199804  
28

<--

US 1999-231697 A

199901  
14

<--

WO 1999-US6928 W

199903  
30

<--

AB The invention is directed to a fluid catalytic cracking process conducted in a fluid catalytic cracking unit (FCCU) comprising one or more risers, each of the risers having a plurality of injection nozzles therein and at least one reaction zone therein comprising the steps of spatially nonuniformly injecting a plurality of feeds wherein the plurality of feeds comprises at least one feed ( $\alpha$ ) and at least another feed ( $\beta$ ), wherein the feeds ( $\alpha$ ) and ( $\beta$ ): (a) differ in Conradson Carbon Residue by .gtorsim.2 weight% points; or (b) differ in hydrogen content by .gtorsim.0.2 weight%; or (c) differ in API gravities by .gtorsim.2 points; or (d) differ in nitrogen content by .gtorsim.50 ppm; or (e) differ in carbon-to-hydrogen ratio by .gtorsim.0.3; or (f) differ in mean b.p. by .gtorsim.200°F; and wherein the spatially nonuniform injection is accomplished by (i) simultaneously injecting into a single reaction zone of a single riser the feed ( $\alpha$ ) from at least one injection nozzle of the riser and the feed ( $\beta$ ) from the remaining nozzles of the riser; (ii) simultaneously injecting the feed ( $\alpha$ ) into at least one of the reaction zones of the riser of the FCCU and the feed ( $\beta$ ) into another of the reaction zones of the riser of the FCCU; or (iii) simultaneously injecting the feed ( $\alpha$ ) into at least one riser of the FCCU and the feed ( $\beta$ ) into a second riser of the FCCU. Wherein when the spatially nonuniform injection is accomplished by (iii), the feeds are substantially non-paraffinic feeds.

IC ICM C10G0011-18

CC 51-6 (Fossil Fuels, Derivatives, and Related Products)

IT Petroleum cracking

(FCC; fluid catalytic cracking  
process for converting a plurality of feeds)

IT Fuels

(liquid, manufacture; fluid catalytic  
cracking process for converting a plurality of  
feeds)

IT Gasoline

Naphtha

(manufacture; fluid catalytic cracking

process for converting a plurality of feeds)  
 IT Petroleum refining residues  
 (vacuum distillation, feeds; fluid catalytic  
 cracking process for converting a plurality of  
 feeds)  
 IT Gas oils  
 (vacuum, feeds; fluid catalytic  
 cracking process for converting a plurality of  
 feeds)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	File
Ashland Oil Inc	1984			EP 0101553 A	HCAPLUS
Bryson Millard, C	1971			US 3617496 A	HCAPLUS
Goelzer Alan, R	1991			US 5009769 A	HCAPLUS
Krishna Ashok, S	1992			US 5098554 A	HCAPLUS
Mitchell Norris, W	1969			US 3424672 A	HCAPLUS
Reynolds David, L	1976			US 3993556 A	HCAPLUS
Stone & Webster Eng Cor	1990			EP 0369536 A	HCAPLUS
Total France	1989			EP 0323297 A	HCAPLUS
Wooyoung, L	1975			US 3928172 A	HCAPLUS

L79 ANSWER 6 OF 16 HCAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 1997:262598 HCAPLUS Full-text  
 DOCUMENT NUMBER: 126:307185  
 ORIGINAL REFERENCE NO.: 126:59481a,59484a  
 TITLE: Split feed injection fluid catalytic cracking  
 process  
 INVENTOR(S): Krishna, Ashok S.; Skocpol, Robert C.;  
 Frederickson, Lewis A.  
 PATENT ASSIGNEE(S): Chevron Research and Technology Co., USA  
 SOURCE: U.S., 7 pp., Cont. of U.S. Ser. No. 259,313,  
 abandoned.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5616237	A	19970401	US 1996-626618	199604 01
			<--	
PRIORITY APPLN. INFO.:			US 1994-259313	B1 199406 13
			<--	

AB A fluid catalytic cracking unit equipped with multiple feed injection points along the length of the riser is operated such that portions of the same fresh feed are charged to different feed injection points. Preferably, the hydrocarbon fresh feed can be split into two or more non-distinct fractions, with one fraction charged to the bottom injection point along the length of the riser reactor, and the remaining fractions charged to injection points progressively higher up along the length of the riser reactor with the temperature of the upper injection feed fractions being different from that of the lowest injection point fraction prior to entry into the FCC riser reactor. Hydrocarbon products from the cracking process can be recycled to one or more of the various injection points along the length of the riser.

IC ICM C10G0011-05

INCL 208120000

CC 51-6 (Fossil Fuels, Derivatives, and Related Products)

IT Petroleum cracking

Petroleum cracking catalysts

(FCC; split feed injection fluid  
catalytic cracking process)

IT Gasoline

(split feed injection fluid  
catalytic cracking process for manufacture of)

RETABLE

Referenced	Author	Year	VOL	PG	Referenced Work	
	(RAU)	(RPY)	(RVL)	(RPG)	(RWK)	File
=====	+	+	+	+	+	+
==						
Anon					US 4584090 A	HCAPLUS
Anon					US 4869807 A	HCAPLUS

L79 ANSWER 7 OF 16 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1993:411864 HCAPLUS Full-text

DOCUMENT NUMBER: 119:11864

ORIGINAL REFERENCE NO.: 119:2287a,2290a

TITLE: Multiple wye catalytic cracker and process for use

INVENTOR(S): Miller, Charles B.; Moore, Howard F.

PATENT ASSIGNEE(S): Ashland Oil, Inc., USA

SOURCE: U.S., 6 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 5194227	A	19930316	US 1991-770205	199110 02
			<--	
CA 2078282	A1	19930403	CA 1992-2078282	



199209  
15

PRIORITY APPLN. INFO.:

US 1991-770205

A

199110  
02

AB The conventional wye (where the clean regenerated catalyst returns from the regenerator to contact the feed as it enters the riser) is replaced with  $\geq 2$  wyes, all connected between the regenerator outlet and inlet to a common short cracking riser. Each wye has a sep. injector which can inject, e.g., diesel oil, so that neat (unmixed) diesel contacts clean catalyst and mixture rises up a small riser before entering a short main riser where the largely cracked mixture is mixed with similar cat-vacuum bottoms, etc., mixts. from the other wyes. Most cracking occurs before entering the common riser so the effect is similar to a riser cracker operating on a single unmixed feed.

IC ICM B01J0008-26

INCL 422140000

CC 51-6 (Fossil Fuels, Derivatives, and Related Products)

IT Fuels, diesel

(cracking of sep. feeds of, in multiple riser arrangement crackers)

IT Gasoline

(manufacture of, by fluid catalytic cracking, cracker for, multiple riser arrangement in)

IT Fuels

(automotive, manufacture of, by fluid catalytic cracking, cracker for, multiple riser arrangement in)

RETABLE

Referenced Author	Year	VOL	PG	Referenced Work	
Referenced	(RAU)	(RPY)	(RVL)	(RPG)	(RWK)   File
=====+=====+=====+=====+=====+=====					
==					

Anon | | | US 3186805 A | HCAPLUS  
OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS  
RECORD (2 CITINGS)

L79 ANSWER 8 OF 16 HCAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 1993:128037 HCAPLUS Full-text  
DOCUMENT NUMBER: 118:128037  
ORIGINAL REFERENCE NO.: 118:22119a,22122a  
TITLE:

Multiple-zone fluid  
catalytic cracking of  
multiple feedstocks in  
riser reactors in the presence of  
large-pore zeolites

INVENTOR(S): Harandi, Mohsen N.; Owen, Hartley

PATENT ASSIGNEE(S): Mobil Oil Corp., USA

SOURCE: U.S., 10 pp. Cont. of U.S. Ser. No. 527,985,

abandoned.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 5154818	A	19921013	US 1991-749483	199108 15
US 5372704	A	19941213	US 1992-859756	199203 30
PRIORITY APPLN. INFO.:				
			US 1990-527985	B1 199005 24
			US 1991-749483	A2 199108 15

AB **Fluid catalytic cracking of multiple hydrocarbon feedstocks** in the presence of large-pore zeolite Y or ultrastable Y is carried out by multizone reaction comprising (1) contacting a 1st feedstock in one zone with a spent catalyst, (2) contacting the 2nd feedstock in a 2nd zone with regenerated catalyst, and (3) introducing the product from the 1st zone into the 2nd zone. The 1st reaction zone temperature is 700-1000°F, and that of the 2nd zone is 950-1200°F. Suitable feedstocks for the 1st feedstocks (which are lighter than the 2nd zone feedstocks) include fuel gas, LPG, and heavy-to-medium naphtha, in contrast to the 2nd zone feedstocks, which can be gas oils, hydrotreated gas oils, topped crudes, deasphalted oils, hydrocracked residues, shale oil, etc.

IC ICM C10G0051-02  
 ICS C10G0051-04; C10G0011-02

INCL 208074000

CC 51-6 (Fossil Fuels, Derivatives, and Related Products)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	File
=====	=====	=====	=====	=====	=====
=====					
Anon				US 2852441 A	HCAPLUS
Anon				US 2908630 A	HCAPLUS
Anon				US 3784463 A	HCAPLUS
Anon				US 3821103 A	HCAPLUS
Anon				US 3849291 A	HCAPLUS
Anon				US 3886060 A	HCAPLUS

Anon				US 3894935 A	HCAPLUS
Anon				US 4090948 A	HCAPLUS
Anon				US 4116814 A	HCAPLUS
Anon				US 4218306 A	HCAPLUS
Anon				US 4436613 A	HCAPLUS
Anon				US 4624771 A	HCAPLUS
Anon				US 4752375 A	HCAPLUS

OS.CITING REF COUNT: 5      THERE ARE 5 CAPLUS RECORDS THAT CITE THIS  
RECORD (5 CITINGS)

L79 ANSWER 9 OF 16    HCAPLUS    COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER:      1992:430264    HCAPLUS    Full-text  
DOCUMENT NUMBER:        117:30264  
ORIGINAL REFERENCE NO.: 117:5395a,5398a  
TITLE:                   Expedient method for  
                         altering the yield  
                         distribution from fluid  
                         catalytic cracking  
                         units

INVENTOR(S):            Krishna, Ashok S.; English, Alan R.; Raterman,  
                         Michael F.  
PATENT ASSIGNEE(S):    Chevron Research Co., USA  
SOURCE:                  U.S., 8 pp. Cont. of U.S. Ser. No. 489,847,  
                         abandoned.  
                         CODEN: USXXAM  
DOCUMENT TYPE:          Patent  
LANGUAGE:                English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 5098554	A	19920324	US 1990-590434	199009 26
			<--	
PRIORITY APPLN. INFO.:			US 1985-792722	B1 198510 30
			<--	
			US 1987-134765	B1 198712 18
			<--	
			US 1988-258249	B1 198810 14
			<--	
			US 1990-489847	B1 199003 02
			<--	

AB A fluid catalytic cracking unit equipped with multiple feed injection point along the length of the riser is operated such that all of the fresh feed is charged to one of different feed injection points, depending on the ratio of light distillate (gasoline) to middle distillate (light catalytic gas oil) that is desired in the product slate. When all of the fresh feed is charged to one of the upper injection points in the riser in order to increase middle distillate yield, the unconverted slurry oil can be recycled to a location below the injection point of the fresh feed so as to increase conversion to middle distillate while lowering the activity of the catalyst (via coke deposition) for single pass conversion of the fresh feed. Steam in excess of levels typically employed for dispersion is used at the bottom of the riser to lift the regenerated catalyst up to the feed injection points.

IC ICM C10G0011-00

INCL 208113000

CC 51-6 (Fossil Fuels, Derivatives, and Related Products)

IT Steam

(inert gas, catalytically, for fluid catalytic cracking riser, with upper injection of feeds)

IT Petroleum refining

(cracking, fluid, copper injection of feeds to riser in, for middle distillate yield distribution)

IT 74-82-8, Methane, uses 74-84-0, Ethane, uses 74-98-6, Propane, uses 1333-74-0, Hydrogen, uses 7664-41-7, Ammonia, uses 7783-06-4, Hydrogen sulfide, uses

(inert gas, catalytically, for fluid catalytic cracking riser, with upper injection of feeds)

IT 7732-18-5

(steam, inert gas, catalytically, for fluid catalytic cracking riser, with upper injection of feeds)

#### RETABLE

Referenced Author	Year	VOL	PG	Referenced Work	
Referenced					
(RAU)	(RPY)	(RVL)	(RPG)	(RWK)	File
=====	+	=====	+	=====	+
==					
Anon				EP 0101878 A2	HCAPLUS
Anon				US 2994659 A	HCAPLUS
Anon				US 3042196 A	HCAPLUS
Anon				US 3193494 A	HCAPLUS
Anon				US 3959117 A	HCAPLUS
Anon				US 4345991 A	HCAPLUS
Anon				US 4405445 A	HCAPLUS

OS.CITING REF COUNT: 8 THERE ARE 8 CAPLUS RECORDS THAT CITE THIS RECORD (8 CITINGS)

L79 ANSWER 10 OF 16 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1990:500675 HCAPLUS Full-text

DOCUMENT NUMBER: 113:100675

ORIGINAL REFERENCE NO.: 113:16983a,16986a

TITLE: Multiple feed point catalytic cracking process using elutriable catalyst mixture

INVENTOR(S): Herbst, Joseph A.; Owen, Hartley; Schipper, Paul

PATENT ASSIGNEE(S): H.  
 SOURCE: Mobil Oil Corp., USA  
 U.S., 12 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 4927522	A	19900522	US 1988-292206	198812 30
			<--	
US 5053204	A	19911001	US 1990-500357	199003 28
			<--	
PRIORITY APPLN. INFO.:			US 1988-292206	A3 198812 30
			<--	

OTHER SOURCE(S): CASREACT 113:100675

AB A fluidized catalytic cracking process operates with multiple feed injection points to a riser reactor with several enlarged regions. An elutriable catalyst mixture is used, comprising a conventionally sized cracking catalyst and a faster settling, shape-selective additive cracking catalyst. Straight run naphtha and a light, H<sub>2</sub>-rich aliphatic stream are added to the base of a riser reactor. A resid feed is added higher up in the riser, with a gas oil and recycled heavy cycle oil and naphtha streams added even in higher up in the riser. The riser has an elutriating phase, and an elutriating upper portion, which increase residence time of the shape-selective zeolite additive relative to the conventionally sized cracking catalyst.

IC ICM C10G0011-05  
 ICS C10G0011-18

INCL 208120000

CC 51-6 (Fossil Fuels, Derivatives, and Related Products)

IT Gasoline  
 (manufacture of, by fluid catalytic cracking, with multiple feed points and elutriable catalyst mixts.)

IT Zeolites, uses and miscellaneous  
 (Y, catalysts, for fluidized catalytic cracking, with multiple feed points)

IT Zeolites, uses and miscellaneous  
 (Y, dealuminated, catalysts, for fluidized catalytic cracking, with multiple feed points)

IT Zeolites, uses and miscellaneous  
 (Y, ultrastable, catalysts, for

fluidized catalytic cracking, with  
multiple feed points)  
IT Zeolites, uses and miscellaneous  
(ZSM 5, catalysts, for  
fluidized catalytic cracking, with  
multiple feed points)  
IT Petroleum refining  
(cracking, fluid catalytic,  
multiple feed injections in)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	File
=====	=====	=====	=====	=====	=====
==					
Anon				US 3847793 A	HCAPLUS
Anon				US 3894932 A	HCAPLUS
Anon				US 3894934 A	HCAPLUS
Anon				US 4035285 A	HCAPLUS
Anon				US 4116814 A	HCAPLUS
Anon				US 4490241 A	HCAPLUS
Anon				US 4717466 A	HCAPLUS
Anon				US 4787967 A	HCAPLUS
Anon				US 4826586 A	HCAPLUS

OS.CITING REF COUNT: 12 THERE ARE 12 CAPLUS RECORDS THAT CITE THIS  
RECORD (12 CITINGS)

L79 ANSWER 11 OF 16 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1990:80788 HCAPLUS Full-text

DOCUMENT NUMBER: 112:80788

ORIGINAL REFERENCE NO.: 112:13763a,13766a

TITLE: Gasoline octane enhancement in fluid catalytic  
cracking process with split feed injection to  
riser reactor

INVENTOR(S): Krishna, Ashok S.

PATENT ASSIGNEE(S): Chevron Research Co., USA

SOURCE: U.S., 7 pp. Cont.-in-part of U.S. Ser. No.  
792,718, abandoned.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 4869807	A	19890926	US 1987-67678	198706 26
EP 232587	A1	19870819	EP 1986-308420	198610 29

<--

EP 232587                    B1        19900207  
           R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE  
 CA 1280709                    C        19910226        CA 1986-521691

198610  
29

<--

US 36403                    E        19991123        US 1994-357567

199412  
16

<--

PRIORITY APPLN. INFO.:                    US 1985-792718        A2

198510  
30

<--

US 1987-67678                    A5

198706  
26

<--

US 1991-764599                    B1

199109  
24

<--

AB    A process for the conversion of unsegregated hydrocarbon feed in an FCC riser reactor using zeolitic catalyst comprises (a) splitting the feed and injecting at  $\geq 1$  positions along the length of the riser, where 60-75 volume% of the feed is injected to the lowest injection position, and the distance between the lowest injection position and the next highest injection position comprises  $>20\%$  of the total length of the riser, (b) selecting the number of feed splits and positions along the riser length to the minimize the octane number of the gasoline, (c) recycling regenerated catalyst into the bottom of the riser, and (d) lifting the regenerated catalyst up the FCC riser to the injection position of the feed with a flow of catalytically inert gas.

IC    ICM   C10G0011-05

INCL 208120000

CC    51-6 (Fossil Fuels, Derivatives, and Related Products)

IT    Gasoline  
       (manufacture of, by fluid catalytic  
       cracking, split feed injection in)

IT    Zeolites, uses and miscellaneous  
       (ZSM 5, catalysts containing, for  
       fluid catalytic cracking, with  
       split feed injection, for gasoline manufacture)

IT    Petroleum refining  
       (cracking, fluid catalytic,  
       split feed injection in, for gasoline manufacture)

RETABLE

Referenced Author	Year	VOL	PG	Referenced Work	
(RAU)	(RPY)	(RVL)	(RPG)	(RWK)	File
=====+=====+=====+=====+=====+=====					
==					

Anon				US 3617497 A	HCAPLUS
Anon				US 4405445 A	HCAPLUS
OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD (4 CITINGS)					

L79 ANSWER 12 OF 16 HCAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 1989:60975 HCAPLUS Full-text  
 DOCUMENT NUMBER: 110:60975  
 ORIGINAL REFERENCE NO.: 110:10046h,10047a  
 TITLE: Disposal of petroleum refinery liquid sludge  
 INVENTOR(S): Jacob, Solomon M.; Karsner, Grant G.; Tracy, William J., III  
 PATENT ASSIGNEE(S): Mobil Oil Corp., USA  
 SOURCE: U.S., 4 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 4786401	A	19881122	US 1987-101092	198709 25
CA 1302328	C	19920602	CA 1988-581898	198811 01
AU 8824741	A	19900510	AU 1988-24741	198811 04
AU 614786 EP 367872	B2 A1	19910912 19900516	EP 1988-310451	198811 07
EP 367872 R: BE, DE, ES, FR, GB, IT, NL ES 2029521	B1 T3	19920219 19920816	ES 1988-310451	198811 07
JP 02145690	A	19900605	JP 1988-286612	198811 11
PRIORITY APPLN. INFO.:			US 1987-101092	198709 25



&lt;--

AB Hydrocarbon-containing petroleum refinery liquid sludge in the form of an oil-in-water emulsion is disposed of by mixing with a hydrocarbon oil to invert the emulsion, and then mixing the water-in-oil emulsion with a feedstock for a fluid catalytic cracking reactor.

IC ICM C10G0011-18

ICS C10G0017-00; C10G0055-06

INCL 208085000

CC 51-24 (Fossil Fuels, Derivatives, and Related Products)

Section cross-reference(s): 60

IT Petroleum refining

(cracking, fluid catalytic,

disposal of petroleum refining sludges by mixing with feedstock for)

IT Petroleum refining residues

(sludges, disposal of, by mixing with feedstock for fluid catalytic cracking reactor)

RETABLE

Referenced Author	Year	VOL	PG	Referenced Work	
(RAU)	(RPY)	(RVL)	(RPG)	(RWK)	File
=====	=====	=====	=====	=====	=====
==					
Anon				US 2922758 A	HCAPLUS
Anon				US 3146185 A	HCAPLUS
Anon				US 3716474 A	HCAPLUS
Anon				US 3917564 A	HCAPLUS
Anon				US 3972180 A	
Anon				US 4105542 A	HCAPLUS
Anon				US 4118281 A	HCAPLUS
Anon				US 4308411 A	HCAPLUS
Anon				US 4324651 A	HCAPLUS
Anon				US 4336129 A	HCAPLUS
Anon				US 4409091 A	HCAPLUS
Anon				US 4417976 A	HCAPLUS
Anon				US 4552649 A	HCAPLUS
Anon				US 4666585 A	HCAPLUS
Anon				US 4686048 A	HCAPLUS
Anon				JP 58000705 A	

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

L79 ANSWER 13 OF 16 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1987:480790 HCAPLUS Full-text

DOCUMENT NUMBER: 107:80790

ORIGINAL REFERENCE NO.: 107:13243a,13246a

TITLE: Gasoline octane  
enhancement in fluid  
catalytic cracking with  
split feed injection

INVENTOR(S): to a riser reactor  
 Krishna, Ashok S.  
 PATENT ASSIGNEE(S): Chevron Research Co., USA  
 SOURCE: PCT Int. Appl., 19 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
WO 8702695	A1	19870507	WO 1986-US2329	198610 30
<--				
W: JP EP 232587	A1	19870819	EP 1986-308420	198610 29
<--				
EP 232587 R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE CA 1280709	B1 C	19900207 19910226	CA 1986-521691	198610 29
<--				
JP 63501222	T	19880512	JP 1986-505909	198610 30
<--				
JP 04071957 PRIORITY APPLN. INFO.:	B	19921117	US 1985-792718	A 198510 30
<--				
			WO 1986-US2329	W 198610 30

AB A process for cracking a hydrocarbon feed (e.g., gas oil) to produce high-octane gasoline in a fluidized-bed catalytic ~~riser~~ reactor comprises (1) splitting the hydrocarbon feed and injecting at >1 positions along a length of the ~~riser~~ reactor, (2) selecting the number of feed splits and selecting the positions along the length of the ~~riser~~ reactor to maximize the octane number of the gasoline, (3) recycling regenerated catalysts to the bottom of the ~~riser~~ reactor, and (4) lifting the regenerated catalyst up the ~~riser~~ reactor to the injection position of the hydrocarbon feed with a flow of catalytically inert gas (preferably steam or recycled absorber gas). A gas oil was cracked over a conventional rare earth-exchanged Y zeolite catalyst in the ~~riser~~ reactor in which 25 volume% of the feed is fed to bottom injector and 75 volume% of the feed is fed to the

upper injector. Up to 78.7 volume% of the feedstock was converted and the product gasoline had a research octane number of 95.2.

IC ICM C10G0011-02  
ICS C10G0011-05  
CC 51-6 (Fossil Fuels, Derivatives, and Related Products)  
ST gasoline prodn gas oil cracking; catalytic cracking riser  
reactor gasoline; zeolite catalyst gas oil cracking  
IT Gas oils  
(cracking of, in fluidized riser reactor, for  
high-octane gasoline production, multiple injection of feed in)  
IT Gasoline  
(production of, by catalytic cracking of gas oil in fluidized  
riser reactor, multiple injection of feed in)

RETABLE

Referenced Author	Year	VOL	PG	Referenced Work	
Referenced	(RAU)	(RPY)	(RVL)	(RPG)	(RWK)   File
=====	=====	=====	=====	=====	=====
==					
Anon				US 3617497 A	HCAPLUS
Anon				US 4405445 A	HCAPLUS

L79 ANSWER 14 OF 16 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1986:446087 HCAPLUS Full-text

DOCUMENT NUMBER: 105:46087

ORIGINAL REFERENCE NO.: 105:7579a,7582a

TITLE: Feed mixing  
technique for fluidized  
catalytic cracking of  
hydrocarbon oil

INVENTOR(S): Penick, Joe Edward

PATENT ASSIGNEE(S): Mobil Oil Corp., USA

SOURCE: Eur. Pat. Appl., 18 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
EP 180291	A1	19860507	EP 1985-304727	198507 02

<--

R: BE, DE, FR, GB, IT, NL			
US 4523987	A	19850618	US 1984-665333

198410  
26

<--

PRIORITY APPLN. INFO.: US 1984-665333 A

198410  
26

<--

AB A mixing process for fluidized catalytic cracking comprises injecting continuously a petroleum feedstock (at 150-379°) with a 1st low-activity catalyst (e.g., at <600°) to the ~~riser~~ bottom to vaporize a major amount of the feedstock without substantial cracking (e.g., at <425°), followed by mixing with a 2nd hot active catalyst (at 650-725°) downstream of the 1st mixing zone to crack the vaporized oil at 480-535°. The total catalyst-feedstock weight ratio when using 2 regenerators is 8-14:1. Thus, a gas oil was heated to 250-425°, mixed with less active catalyst (at 595°) at 8.7:1 (weight ratio) catalyst-oil to vaporize 90% of the oil; this mixture was then mixed with 4 weight parts regenerated catalyst (at 750°) to crack the vaporized oil to the products. This process resulted in less overcracking and an improved product distribution.

IC ICM C10G0011-18

ICS B01J0008-18

CC 51-6 (Fossil Fuels, Derivatives, and Related Products)

IT Petroleum refining catalysts

(cracking, regenerated, two-stage addition of, to ~~riser~~ reactor, for gas oils)

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS  
RECORD (2 CITINGS)

L79 ANSWER 15 OF 16 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1986:227605 HCAPLUS Full-text

DOCUMENT NUMBER: 104:227605

ORIGINAL REFERENCE NO.: 104:36067a,36070a

TITLE: Feed mixing  
technique for fluidized  
catalytic cracking of  
hydrocarbon oil

INVENTOR(S): Chou, Taisheng; Lee, Changkuei

PATENT ASSIGNEE(S): Mobil Oil Corp., USA

SOURCE: U.S., 7 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 4578183	A	19860325	US 1984-676967	198411 30

<--

PRIORITY APPLN. INFO.:

US 1984-676967

198411  
30

<--

AB In a fluid cracking process, vaporization of oil feed is optimized prior to catalytic cracking. A draft tube mixer placed in the lower reactor ~~rises~~ splits the hot regenerated catalyst into 2 portions to improve the mixing of catalyst and oil. The feed comprises a petroleum fraction-heated to 105-390°. The hot regenerated catalyst is passed from the regenerator at .apprx.640-730° and the mixt of vaporized feed and the 1st catalyst portion contacts the 2nd catalyst portion at .ltorsim.560°. The process can be used to optimize gasoline yield.

IC ICM C10G0035-14

INCL 208113000

CC 51-6 (Fossil Fuels, Derivatives, and Related Products)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	File
=====	=====	=====	=====	=====	=====
==					
Anon				US 2606097 A	HCAPLUS
Anon				US 2885272 A	HCAPLUS
Anon				US 3152065 A	
Anon				US 3523703 A	
Anon				US 3754993 A	HCAPLUS
Anon				US 3826739 A	HCAPLUS
Anon				US 4141794 A	HCAPLUS
Anon				US 4230668 A	
Anon				US 4417974 A	HCAPLUS
Anon				US 4427537 A	HCAPLUS
Anon				US 4523987 A	HCAPLUS

OS.CITING REF COUNT: 7 THERE ARE 7 CAPLUS RECORDS THAT CITE THIS RECORD (7 CITINGS)

L79 ANSWER 16 OF 16 HCAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 1982:38224 HCAPLUS Full-text  
DOCUMENT NUMBER: 96:38224  
ORIGINAL REFERENCE NO.: 96:6305a,6308a  
TITLE: Apparatus for the catalytic cracking of hydrocarbons  
INVENTOR(S): Ford, William D.; Clark, Michael J.  
PATENT ASSIGNEE(S): Standard Oil Co., USA  
SOURCE: U.S., 10 pp.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 4297203	A	19811027	US 1980-139894	198004 14

PRIORITY APPLN. INFO.:

<--  
US 1980-139894

198004  
14

<--

AB An apparatus for the simultaneous fluidized catalytic cracking of multiple or dissimilar hydrocarbon feedstocks consists of 2 independent transfer-line reactors, each associated with a cyclone separation system within a common vessel. Thus, gas oil and naphtha can be simultaneously cracked at 510-595° over conventional catalysts without mixing either feed or products.

IC C10G0011-18; C10G0051-06

INCL 208074000

CC 51-23 (Fossil Fuels, Derivatives, and Related Products)  
Section cross-reference(s): 47, 48

IT Gas oils  
(catalytic cracking of, in fluidized  
beds independent of another feed)

IT Naphtha  
(catalytic cracking of, in fluidized  
beds independent of another feed)

IT Petroleum refining  
(cracking, fluidized-bed, of multiple  
feedstocks in independent reactors)

RETABLE

Referenced Author	Year	VOL	PG	Referenced Work	
(RAU)	(RPY)	(RVL)	(RPG)	(RWK)	File
=====	=====	=====	=====	=====	=====
==					
Anon				US 2767126 A	HCAPLUS
Anon				US 2956003 A	HCAPLUS
Anon				US 3886060 A	HCAPLUS
Anon				US 4067798 A	HCAPLUS
Anon				US 4116814 A	HCAPLUS
Anon				US 4138219 A	HCAPLUS
Anon				US 4220623 A	HCAPLUS

OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS  
RECORD (4 CITINGS)

=> FIL WPIX  
FILE 'WPIX' ENTERED AT 11:35:49 ON 30 JUL 2009  
COPYRIGHT (C) 2009 THOMSON REUTERS

=> D L70 1-3 IFULL

L70 ANSWER 1 OF 3 WPIX COPYRIGHT 2009 THOMSON REUTERS on STN  
ACCESSION NUMBER: 2002-741215 [80] WPIX  
DOC. NO. CPI: C2002-210048 [80]  
TITLE: Fluidized catalytic  
cracking feed atomization  
, for use in

petroleum refining industry, involves  
mixing FCC feed with  
different atomizing fluids at different  
mixing zones and providing resulting mixture to  
feed nozzle

DERWENT CLASS: H04  
INVENTOR: ADAMSON W R; BEDELL M W; SWAN G A  
PATENT ASSIGNEE: (ESSO-C) EXXONMOBIL RES & ENG CO; (ADAM-I) ADAMSON  
W R; (BEDE-I) BEDELL M W; (SWAN-I) SWAN G A;  
(ESSO-C) EXXON RES & ENG CO  
COUNTRY COUNT: 96

# PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 2002086020	A1	20021031	(200280)*	EN	29[7]	
<--						
US 20020189974	A1	20021219	(200303)	EN		
<--						
AU 2002311805	A1	20021105	(200433)	EN		
<--						
CN 1503834	A	20040609	(200460)	ZH		
<--						
JP 2004532317	W	20041021	(200469)	JA	44	
<--						
US 6916416	B2	20050712	(200546)	EN		
TW 263674	B1	20061011	(200741)	ZH		
AU 2002311805	B2	20070614	(200765)	EN		
JP 4185776	B2	20081126	(200880)	JA	12	

# APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2002086020	A1	WO 2002-US10978	
20020409			
US 20020189974	A1 Provisional	US 2001-285026P	
20010419			
US 6916416	B2 Provisional	US 2001-285026P	
20010419			
US 20020189974	A1	US 2002-113194	
20020401			
US 6916416	B2	US 2002-113194	
20020401			
AU 2002311805	A1	AU 2002-311805	
20020409			
AU 2002311805	B2	AU 2002-311805	
20020409			
CN 1503834	A	CN 2002-808418	
20020409			
JP 2004532317	W	JP 2002-583538	
20020409			
TW 263674	B1	TW 2002-107765	

20020416	
JP 4185776 B2	JP 2002-583538
20020409	
JP 2004532317 W PCT Application	WO 2002-US10978
20020409	
JP 4185776 B2 PCT Application	WO 2002-US10978
20020409	

FILING DETAILS:

PATENT NO	KIND		PATENT NO	
AU 2002311805	A1	Based on	WO 2002086020	A
JP 2004532317	W	Based on	WO 2002086020	A
AU 2002311805	B2	Based on	WO 2002086020	A
JP 4185776	B2	Previous Publ	JP 2004532317	W
JP 4185776	B2	Based on	WO 2002086020	A

PRIORITY APPLN. INFO: US 2002-113194 20020401  
 US 2001-285026P 20010419

INT. PATENT CLASSIF.:

MAIN: C10G0011-00; C10G0011-18  
 SECONDARY: C10G0035-14  
 IPC ORIGINAL: C10G0011-00 [I,C]; C10G0011-00 [I,C]; C10G0011-18 [I,A]  
 IPC RECLASSIF.: C10G0011-00 [I,C]; C10G0011-18 [I,A]  
 ECLA: C10G0011-18  
 USCLASS NCLM: 208/113.000

JAP. PATENT CLASSIF.:

MAIN/SEC.: C10G0011-18  
 MAIN: C10G0011-18  
 FTERM CLASSIF.: 4H029; 4H129; 4H029/BD08; 4H029/BD20

BASIC ABSTRACT:

WO 2002086020 A1 UPAB: 20060120

NOVELTY - The fluidized catalytic cracking (FCC) feed is mixed with a primary atomizing fluid in a primary mixing zone (110). The mixture is passed to a secondary mixing zone (120) where a secondary atomizing fluid selected from steam, light hydrocarbon gas, inert gas and their combinations is mixed with the input mixture and the resulting mixture is sent to a feed nozzle (200).

USE - For atomizing fluidized catalytic cracking (FCC) feed, such as heavy and reduced petroleum crude oil, petroleum atmospheric distillation, petroleum vacuum distillation in petroleum refining industry and also pitch, asphalt, bitumen, tar sand oil, shale oil and liquid products derived from coal liquefaction process.

ADVANTAGE - Since more atomizing fluid is injected at high velocity into the mixture in subsequent mixing zone, the kinetic energy of the mixture increases and its homogeneity increases, thus causing the liquid ligaments to form as the liquid feed is ejected through the nozzle. The increasing kinetic energy and the effective conversion of kinetic energy to surface tension energy improves atomization quality by creation of smaller mean liquid droplet diameters.



DESCRIPTION OF DRAWINGS - The figure shows the structure of FCC feed atomizing apparatus.

Primary mixing zone (110)

Secondary mixing zone (120)

Feed nozzle (200)

FILE SEGMENT: CPI

MANUAL CODE: CPI: H04-B02; H04-F02B; N07-F02

L70 ANSWER 2 OF 3 WPIX COPYRIGHT 2009 THOMSON REUTERS on STN

ACCESSION NUMBER: 1996-361907 [36] WPIX

DOC. NO. CPI: C1996-113934 [36]

DOC. NO. NON-CPI: N1996-305142 [36]

TITLE: Upper feed injector  
for fluidised catalytic  
cracking unit - for feeding  
hydrocarbonaceous materials to cracking  
appts by split injection where a portion of feed is  
injected into a downstream section of a riser  
reactor pipe

DERWENT CLASS: H04; Q77

INVENTOR: ENGLISH A R

PATENT ASSIGNEE: (CALI-C) CHEVRON USA INC

COUNTRY COUNT: 1

#### PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 5540893	A	19960730	(199636)*	EN	7[4]	

<--

#### APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 5540893	A Cont of	US 1989-328061	
	19890323		
US 5540893	A	US 1991-702435	
	19910516		

PRIORITY APPLN. INFO: US 1991-702435 19910516  
US 1989-328061 19890323

#### INT. PATENT CLASSIF.:

IPC RECLASSIF.: C10G0011-00 [I,C]; C10G0011-18 [I,A]

ECLA: C10G0011-18

#### BASIC ABSTRACT:

US 5540893 A UPAB: 20050512

Appts. for fluidised catalytic cracking of hydrocarbons, includes: (a) riser reactor (12) and means for circulating heated mixture of catalytic particles; (b) hydro-carbonaceous material for catalytic reaction of material in the riser reactor; (c) means (28) for discharging output of riser reactor into a large dia. separator vessel (26), riser reactor including internal portion (68) within separator vessel extending from lower portion of vessel to upper

portion and external portion (18) not enclosed by separator vessel and generally internal portion of riser reactor; (d) means for separating hydrocarbon vapours from spent catalyst in separator vessel; (e) stripper for recovering residual hydrocarbon vapours from spent catalyst passing from separator vessel to catalyst regenerator for recycling regenerated catalyst to riser reactor; and (f) unit (58) within separator vessel for recovering cracked hydrocarbon vapours for transfer to hydrocarbon recovery means (60) for recovery of hydrocarbon components. The improvement is that hydrocarbon feed (22a,24a) is located within internal portion of riser reactor and feed line enters riser reactor at external portion extending to internal portion above external portion. Nozzle (22,24) is connected to feed line above external portion of riser reactor for injecting hydrocarbon feed into riser reactor. One or more hydrocarbon feed(s) on external portion of riser inject feed into riser reactor below internal portion of riser.

USE - Fluidised catalytic cracking of hydrocarbons which feeds hydro-carbonaceous materials to a cracking appts. by split injection.

ADVANTAGE - Split feed design in a FCC unit permits split feeding in internal riser reactor without undue expense and which can easily be retrofitted to existing FCC units containing internal riser reactors.

#### DOCUMENTATION ABSTRACT:

US5540893

Appts. for fluidised catalytic cracking of hydrocarbons, includes:

(a) riser reactor (12) and means for circulating heated mixture of catalytic particles;

(b) hydro-carbonaceous material for catalytic reaction of material in the riser reactor;

(c) means (28) for discharging output of riser reactor into a large dia. separator vessel (26), riser reactor including internal portion (68) within separator vessel extending from lower portion of vessel to upper portion and external portion (18) not enclosed by separator vessel and generally internal portion of riser reactor;

(d) means for separating hydrocarbon vapours from spent catalyst in separator vessel;

(e) stripper for recovering residual hydrocarbon vapours from spent catalyst passing from separator vessel to catalyst regenerator for recycling regenerated catalyst to riser reactor; and

(f) unit (58) within separator vessel for recovering cracked hydrocarbon vapours for transfer to hydrocarbon recovery means (60) for recovery of hydrocarbon components.

The improvement is that hydrocarbon feed (22a,24a) is located within internal portion of riser reactor and feed line enters riser reactor at external portion extending to internal portion above external portion. Nozzle (22,24) is connected to feed line above external portion of riser reactor for injecting hydrocarbon feed into riser reactor. One or more

hydrocarbon feed(s) on external portion of riser inject  
feed into riser reactor below internal portion of riser.

USE

Fluidised catalytic cracking of  
hydrocarbons which feeds hydro-carbonaceous materials to a  
cracking appts. by split injection.

ADVANTAGE

Split feed design in a FCC unit permits  
split feeding in internal riser reactor without undue expense and  
which can easily be retrofitted to existing FCC units containing  
internal riser reactors.

PREFERRED APPARATUS

First hydrocarbon feed injects first feed into  
internal portion, and second hydrocarbon feed injects  
second feed into external portion.

Nozzle is about 12 ins. below riser reactor discharge to  
about 12 ins. above end of external section. Feed pipe is spaced  
from about 0 to about 2 inches from inner wall of riser reactor.  
Inner wall of riser reactor and outer surface of feed line are  
coated with abrasion resistance cpd.

Appts. includes means for securing first feed line adjacent  
inner wall of riser reactor, and abrasion resistant coating placed  
over first feed line and inner wall of reactor. First and second  
hydrocarbon feeds each includes a nozzle, nozzle of first  
within the last 10%, 40% or 60% of the length of internal portion  
of riser reactor adjacent discharging means. (RBH)

FILE SEGMENT: CPI; GMPI  
MANUAL CODE: CPI: H04-B02; H04-F02B

L70 ANSWER 3 OF 3 WPIX COPYRIGHT 2009 THOMSON REUTERS on STN  
ACCESSION NUMBER: 1987-136023 [19] WPIX  
DOC. NO. CPI: C1987-056682 [21]  
TITLE: Converting hydrocarbon  
feed to gasoline  
etc. in FCC riser reactor - gasoline  
octane number being increased by dividing feed  
injection over points at different heights up the  
riser  
DERWENT CLASS: H04; H06  
INVENTOR: KRISHNA A S  
PATENT ASSIGNEE: (CALI-C) CHEVRON RES CO  
COUNTRY COUNT: 14

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 8702695	A	19870507	(198719)*	EN	19[0]	
<--						
EP 232587	A	19870819	(198733)	EN	9	
<--						
JP 63501222	W	19880512	(198825)	JA		
<--						
EP 232587	B	19900207	(199006)	EN		

```

      <--
DE 3668904      G  19900315 (199012)  DE
      <--
CA 1280709      C  19910226 (199114)  EN
      <--
JP 04071957     B  19921117 (199250)  JA   8
      <--

```

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 8702695 A		WO 1986-US2329	
19861030			
EP 232587 A		EP 1986-308420	
19861029			
JP 63501222 W		JP 1986-505909	
19861030			
JP 04071957 B		JP 1986-505909	
19861030			
JP 04071957 B		WO 1986-US2329	
19861030			

FILING DETAILS:

PATENT NO	KIND	PATENT NO
JP 04071957 B	Based on	JP 63501222 A
JP 04071957 B	Based on	WO 8702695 A

PRIORITY APPLN. INFO: US 1987-67678 19870626  
 US 1985-792718 19851030

INT. PATENT CLASSIF.:

MAIN: C10G0011-05  
 IPC RECLASSIF.: C10G0011-00 [I,C]; C10G0011-05 [I,A]; C10G0011-18 [I,A]  
 ECLA: C10G0011-18

BASIC ABSTRACT:

WO 1987002695 A UPAB: 20050425

Process for converting hydrocarbon feed in an FCC riser reactor comprises: (a) **splitting** the feed and injecting at more than one position along a length of the riser; (b) selecting the number of feed splits and the positions along the length of the riser to maximise the octane number of the gasoline; (c) recycling regenerated catalyst into the bottom of the riser; and (d) lifting the regenerated catalyst up the riser to the injection position of the hydrocarbon oil feed with a flow of catalytically inert gas. Pref. the various parts of the feed injected have identical compsn.

ADVANTAGE - Increased octane number is provided, without the disadvantages of other methods of achieving this, e.g. of segregating the feed into fractions of different compsn. E.g. by **splitting** the feed 60/40 between bottom and upper injector instead of 100/0, MON clear was increased from 79.5 to 80.7 and RON clear from 90.8 to 93.3

(though 5C-430 deg.F gasoline yield was reduced from 52.6 to 51.5 volume%).

FILE SEGMENT: CPI  
MANUAL CODE: CPI: H04-B02

=> FIL TULSA

FILE 'TULSA' ENTERED AT 11:36:08 ON 30 JUL 2009  
COPYRIGHT (C) 2009 The University of Tulsa (UTULSA)

=> D L91 1 IALL

L91 ANSWER 1 OF 1 TULSA COPYRIGHT 2009 UTULSA on STN  
ACCESSION NUMBER: 2003:24477 TULSA Full-text  
DOCUMENT NUMBER: 822830  
TITLE: METHOD FOR UPGRADING FISCHER-TROPSCH WAX USING  
**SPLIT-FEED**  
HYDROCRACKING/HYDROTREATING  
INVENTOR: MOORE, R O JR  
PATENT ASSIGNEE: CHEVRON USA INC  
PATENT INFO.: US 6583186 B2 20030624  
APPLN. INFO.: US 2001-826533 20010404  
SOURCE: U.S. 6,583,186B2, c. 6/24/2003, f. 4/4/2001 (Appl.  
826,533) (C07C-027/00; C07C-001/00; C10G-071/00;  
C10G-035/04; C10G-047/00). (9 pp; 17 claims)  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
ENTRY DATE: Entered STN: 1 Dec 2003  
Last Updated on STN: 1 Dec 2003

ABSTRACT:

A method is described for hydroprocessing Fischer-Tropsch products. The method in particular relates to an integrated method for producing liquid fuels from a hydrocarbon stream provided by Fischer-Tropsch synthesis. The method involves separating the Fischer-Tropsch products into a light fraction and a heavy fraction. The heavy fraction is subjected to hydrocracking conditions, preferably through multiple catalyst beds, to reduce the chain length. The products of the hydrocracking reaction following the last catalyst bed, optionally after a hydroisomerization step, are combined with the light fraction. The combined fractions are hydrotreated, and, optionally, hydroisomerized. The hydrotreatment conditions hydrogenate double bonds, reduce oxygenates to paraffins, and desulfurize and denitrify the products. Hydroisomerization converts at least a portion of the linear paraffins into isoparaffins.

INT. PATENT CLASS.:

MAIN: C10G0047-00  
SECONDARY: C07C0027-00; C10G0035-04; C10G0071-00; C07C0001-00  
IPC: C10G0047-00; C07C0027-00; C10G0035-04; C10G0071-00;  
C07C0001-00

CLASSIFICATION: PRODUCING OIL & GAS  
SUBJECT HEADING: \*GAS LIQUIDS CONVERSION  
CONTROLLED TERM: \*CHEMICAL PROCESS; \*CHEMICAL REACTION; \*COMPOUND;  
\*CONVERSION PROCESS; \*CRACKING;  
\*HYDROCARBON COMPOUND; \*HYDROGENATION;

\*ISOMERIZATION; \*NATURAL GAS; \*PETROLEUM; \*SOLID  
HYDROCARBON; \*STRANDED NATURAL GAS; \*THERMAL  
CRACKING; \*WAX; (P) USA; ALKALI METAL; BUSINESS  
OPERATION; CARBON MONOXIDE; CATALYSIS; CATALYST;  
CHEMICAL REACTOR; CHEVRON USA INC; CIRCULATING  
SYSTEM; DEWAXING; DISTILLATION; ELEMENT (CHEMICAL);  
ENGLISH; FISCHER TROPSCH PROCESS; FIXED BED;  
FRACTIONATION; FUEL; GAS PRODUCING; HIGH TEMPERATURE;  
HYDROCRACKING; HYDROGEN; INDUSTRIAL PLANT;  
LIQUID FUEL; LUBRICANT/INDUSTRIAL OIL; LUBRICATING  
OIL; MANUFACTURING; OXIDE; PATENT; PHYSICAL  
SEPARATION; PRODUCING; PRODUCING OIL & GAS; PRODUCT;  
RECYCLING; SYNTHESIS GAS; SYSTEM (ASSEMBLAGE);  
TEMPERATURE; ZEOLITE

CAS REGISTRY NO.: 630-08-0 (CARBON MONOXIDE)  
1333-74-0 (HYDROGEN)  
8002-05-9 (PETROLEUM)  
8006-14-2 (NATURAL GAS)  
16833-27-5 (OXIDE)